WHAT IS CLAIMED:

1. A catalyst composition comprising a support having a surface area of at least 500 m^2/kg, and deposited on the support:

silver metal,

a metal or component comprising rhenium, tungsten, molybdenum or a nitrate- or nitrite-forming compound, and

a Group IA metal or component comprising a Group IA metal having an atomic number of at least 37, and in addition potassium,

wherein the value of the expression $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 30 mmole/kg, wherein Q_{HIA} and Q_K represent the quantities in mmole/kg of the Group IA metal having an atomic number of at least 37 and potassium, respectively, present in the catalyst composition, the ratio of Q_{HIA} to Q_K is at least 1:1, the value of Q_K is at least 0.01 mmole/kg, and R is a dimensionless number in the range of from 1.5 to 5, the units mmole/kg being relative to the weight of the catalyst composition.

2. A catalyst composition as claimed in claim 1, wherein the value of R is 2.5.

3. A catalyst composition as claimed in claim 1, wherein Q_K is in the range of from 0.1 to 30 mmole/kg, relative to the weight of the catalyst composition.

4. A catalyst composition as claimed in claim 1, wherein cesium represents at least 90 mole-% of the Group IA metals having an atomic number of at least 37.

5. A catalyst composition as claimed in claim 1, wherein cesium represents at least 99 mole-% of the Group IA metals having an atomic number of at least 37.

6. A catalyst composition as claimed in claim 1, wherein substantially only cesium represents the Group IA metals having an atomic number of at least 37.

7. A catalyst composition as claimed in claim 1, wherein the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 5:1.

8. A catalyst composition as claimed in claim 1, wherein the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 3.5:1.

9. A catalyst composition as claimed in claim 1, wherein the surface area of the support is in the range of from 500 to 5000 m^2/kg, and

$$(Q_K / R) + Q_{HIA} = F \times SA,$$

wherein SA denotes the surface area of the support, in m^2/kg, and F is a factor having a value in the range of from 0.001 to 0.01 $mmole/m^2$.

10. A catalyst composition as claimed in claim 9, wherein the value of F is in the range of from 0.002 to 0.008 $mmole/m^2$.

11. A catalyst composition as claimed in claim 9, wherein the value of F is in the range of from 0.003 to 0.006 $mmole/m^2$.

12. A catalyst composition as claimed in claim 1, wherein

the surface area of the support is in the range of from 500 to 1500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 12 mmole/kg; or

the surface area of the support is in the range of from 1500 to 2500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 4 to 15 mmole/kg; or

the surface area of the support is in the range of from 2500 to 5000 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 5 to 25 mmole/kg.

13. A catalyst composition as claimed in claim 1, wherein

the surface area of the support is in the range of from 500 to 1500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 2 to 6 mmole/kg; or

the surface area of the support is in the range of from 1500 to 2500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 6 to 10 mmole/kg; or

the surface area of the support is in the range of from 2500 to 5000 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ + is in the range of from 10 to 20 mmole/kg.

14. A catalyst composition as claimed in claim 1, wherein the catalyst composition comprises as an additional Group IA metal lithium, in a quantity of from 1 to 500 mmole/kg, relative to the total catalyst composition.

15. A catalyst composition as claimed in claim 1, wherein the catalyst composition comprises rhenium, in addition to silver, and further a rhenium co-promoter which may be selected from one or more of sulfur, phosphorus, boron, and components comprising one or more of sulfur, phosphorus and boron.

16. A process for preparing a catalyst composition, which process comprises selecting a support having a surface area of at least 500 m^2/kg, and depositing on the support:

silver metal,

a metal or component comprising rhenium, tungsten, molybdenum or a nitrate- or nitrite-forming compound, and

a Group IA metal or component comprising a Group IA metal having an atomic number of at least 37, and in addition potassium,

wherein the value of the expression $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 30 mmole/kg, wherein Q_{HIA} and Q_K represent the quantities in mmole/kg of the Group IA metal having an atomic number of at least 37 and potassium, respectively, present in the catalyst composition, the ratio of Q_{HIA} to Q_K is at least 1:1, the value of Q_K is at least 0.01 mmole/kg, and R is a

dimensionless number in the range of from 1.5 to 5, the units mmole/kg being relative to the weight of the catalyst composition.

17. A process as claimed in claim 16, wherein the value of R is 2.5, Q_K is in the range of from 0.1 to 30 mmole/kg, relative to the weight of the catalyst composition, and the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 5:1.

18. A process as claimed in claim 17, wherein the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 3.5:1.

19. A process as claimed in claim 16, wherein cesium represents at least 90 mole-% of the Group IA metals having an atomic number of at least 37.

20. A process as claimed in claim 16, wherein the surface area of the support is in the range of from 500 to 5000 m^2/kg, and

$$(Q_K / R) + Q_{HIA} = F \times SA,$$

wherein SA denotes the surface area of the support, in m^2/kg, and F is a factor having a value in the range of from 0.001 to 0.01 mmole/m^2.

21. A process as claimed in claim 20, wherein the value of F is in the range of from 0.002 to 0.008 mmole/m^2.

22. A process as claimed in claim 16, wherein

the surface area of the support is in the range of from 500 to 1500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 12 mmole/kg; or

the surface area of the support is in the range of from 1500 to 2500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 4 to 15 mmole/kg; or

the surface area of the support is in the range of from 2500 to 5000 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 5 to 25 mmole/kg.

23. A process as claimed in claim 16, wherein the catalyst composition comprises rhenium, in addition to

silver, and further lithium, and a rhenium co-promoter which may be selected from one or more of sulfur, phosphorus, boron, and components comprising one or more of sulfur, phosphorus and boron.

24. A process for preparing ethylene oxide by reacting ethylene with oxygen in the presence of a catalyst composition comprising a support having a surface area of at least 500 m^2/kg, and deposited on the support:

silver metal,

a metal or component comprising rhenium, tungsten, molybdenum or a nitrate- or nitrite-forming compound, and

a Group IA metal or component comprising a Group IA metal having an atomic number of at least 37, and in addition potassium,

wherein the value of the expression $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 30 mmole/kg, wherein Q_{HIA} and Q_K represent the quantities in mmole/kg of the Group IA metal having an atomic number of at least 37 and potassium, respectively, present in the catalyst composition, the ratio of Q_{HIA} to Q_K is at least 1:1, the value of Q_K is at least 0.01 mmole/kg, and R is a dimensionless number in the range of from 1.5 to 5, the units mmole/kg being relative to the weight of the catalyst composition.

25. A process as claimed in claim 24, wherein the value of R is 2.5.

26. A process as claimed in claim 24, wherein Q_K is in the range of from 0.1 to 30 mmole/kg, relative to the weight of the catalyst composition, and the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 5:1.

27. A process as claimed in claim 26, wherein the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 3.5:1.

28. A process as claimed in claim 24, wherein cesium represents at least 90 mole-% of the Group IA metals having an atomic number of at least 37.

29. A process as claimed in claim 24, wherein substantially only cesium represents the Group IA metals having an atomic number of at least 37.

30. A process as claimed in claim 24, wherein the surface area of the support is in the range of from 500 to 5000 m^2/kg, and

$$(Q_K / R) + Q_{HIA} = F \times SA,$$

wherein SA denotes the surface area of the support, in m^2/kg, and F is a factor having a value in the range of from 0.001 to 0.01 $mmole/m^2$.

31. A process as claimed in claim 30, wherein the value of F is in the range of from 0.002 to 0.008 $mmole/m^2$.

32. A process as claimed in claim 24, wherein

the surface area of the support is in the range of from 500 to 1500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 12 mmole/kg; or

the surface area of the support is in the range of from 1500 to 2500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 4 to 15 mmole/kg; or

the surface area of the support is in the range of from 2500 to 5000 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 5 to 25 mmole/kg.

33. A process as claimed in claim 24, wherein the catalyst composition comprises rhenium, in addition to silver, and further a rhenium co-promoter which may be selected from one or more of sulfur, phosphorus, boron, and components comprising one or more of sulfur, phosphorus and boron, and, as an additional Group IA metal, lithium.

34. A process as claimed in claim 24, wherein an organic halide or an organic or inorganic nitrogen compounds is present as reaction modifier.

35. A process as claimed in claim 24, wherein a feed comprising ethylene and oxygen is contacted with the

catalyst composition, and the feed comprises carbon dioxide, in addition to ethylene and oxygen, in a concentration in the range of from 0.5 to 2 mole-%, relative to the total feed.

36. A method of using ethylene oxide for making 1,2-ethanediol or a 1,2-ethanediol ether comprising converting ethylene oxide into 1,2-ethanediol or the 1,2-ethanediol ether, wherein the ethylene oxide has been obtained by a process for preparing ethylene oxide by reacting ethylene with oxygen in the presence of a catalyst composition comprising a support having a surface area of at least 500 m^2/kg, and deposited on the support:

silver metal,

a metal or component comprising rhenium, tungsten, molybdenum or a nitrate- or nitrite-forming compound, and

a Group IA metal or component comprising a Group IA metal having an atomic number of at least 37, and in addition potassium,

wherein the value of the expression $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 30 mmole/kg, wherein Q_{HIA} and Q_K represent the quantities in mmole/kg of the Group IA metal having an atomic number of at least 37 and potassium, respectively, present in the catalyst composition, the ratio of Q_{HIA} to Q_K is at least 1:1, the value of Q_K is at least 0.01 mmole/kg, and R is a dimensionless number in the range of from 1.5 to 5, the units mmole/kg being relative to the weight of the catalyst composition.

37. A method as claimed in claim 36, wherein the value of R is 2.5.

38. A method as claimed in claim 36, wherein Q_K is in the range of from 0.1 to 30 mmole/kg, relative to the weight of the catalyst composition, and the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 5:1.

39. A method as claimed in claim 36, wherein the ratio of Q_{HIA} to Q_K is in the range of from 1:1 to 3.5:1.

40. A method as claimed in claim 36, wherein cesium represents at least 90 mole-% of the Group IA metals having an atomic number of at least 37.

41. A method as claimed in claim 36, wherein the surface area of the support is in the range of from 500 to 5000 m^2/kg, and

$$(Q_K / R) + Q_{HIA} = F \times SA,$$

wherein SA denotes the surface area of the support, in m^2/kg, and F is a factor having a value in the range of from 0.001 to 0.01 $mmole/m^2$.

42. A method as claimed in claim 41, wherein the value of F is in the range of from 0.002 to 0.008 $mmole/m^2$.

43. A method as claimed in claim 36, wherein

the surface area of the support is in the range of from 500 to 1500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 1.5 to 12 mmole/kg; or

the surface area of the support is in the range of from 1500 to 2500 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 4 to 15 mmole/kg; or

the surface area of the support is in the range of from 2500 to 5000 m^2/kg, and the value of $(Q_K / R) + Q_{HIA}$ is in the range of from 5 to 25 mmole/kg.

44. A method as claimed in claim 36, wherein a feed comprising ethylene and oxygen is contacted with the catalyst composition, and the feed comprises carbon dioxide, in addition to ethylene and oxygen, in a concentration in the range of from 0.5 to 2 mole-%, relative to the total feed.

45. A method as claimed in claim 36, wherein the catalyst composition comprises rhenium, in addition to silver, and further a rhenium co-promoter which may be selected from one or more of sulfur, phosphorus, boron,

and components comprising one or more of sulfur, phosphorus and boron, and, as an additional Group IA metal, lithium.